CLAIMS

1. A display apparatus, comprising:

a first substrate provided with a closed container,

a pair of electrodes for generating an electric field in the closed container, and

charged particles held in the closed container, said charged particles being moved by the electric field to determine a distribution of said charged particles in the closed container, thereby to effect display,

wherein said charged particles are of two types which have mutually different charge polarities and a substantially identical color.

2. An apparatus according to Claim 1, wherein a display operation for forming a distribution of said charged particles by applying a voltage of a predetermined polarity to said pair of electrodes and a display operation for forming a distribution which is substantially identical to the distribution of said charged particles by applying a voltage of a polarity opposite to the predetermined polarity of the voltage are alternately performed.

3. An apparatus according to Claim 1, wherein a

display operation for forming a distribution of said charged particles by applying a voltage of a predetermined polarity after applying a reset voltage for resetting the distribution of said charged particles and a display operation for forming a distribution which is substantially identical to the distribution of said charged particles by applying a voltage of a polarity opposite to the predetermined polarity of the voltage after applying a reset voltage of a polarity opposite to that of the reset voltage for resetting the distribution of said charged particles.

4. An apparatus according to Claim 1, wherein said apparatus further comprises a second substrate disposed opposite to the first substrate; a partition wall, for defining the closed container, disposed between said first and second substrates; a display electrode, for distributing said charged particles, dispersed on the first substrate or the second substrate; and first and second reset electrodes for collecting said charged particles of two types at a part of and another part of the partition wall, respectively, to reset the display of said charged particles.

5. An apparatus according to Claim 1, wherein

said apparatus further comprises a second substrate disposed opposite to the first substrate; a partition wall, for defining the closed container, disposed between said first and second substrates; a display electrode, for distributing said charged particles, dispersed on the first substrate or the second substrate; and first and second reset electrodes for collecting said charged particles of two types on the first substrate to reset the display of said charged particles.

6. An apparatus according to Claim 4 or 5, wherein the display electrode is a common electrode, the voltage of the predetermined polarity is a relative potential difference between the common electrode and one of the first and second reset electrodes, and a display voltage which is opposite in polarity to the voltage of the predetermined polarity is a relative potential difference between the common electrode and the other one reset electrode.

7. An apparatus according to Claim 1, wherein said closed container is a microcapsule disposed between said first and second substrates.

8. An electrophoretic display apparatus, comprising:

first and second substrate disposed with a predetermined spacing therebetween to provide a closed space, and

migration particles dispersed in the closed space, a distribution of said migration particles being changed in the closed space to effect display,

wherein said apparatus further comprises a display electrode for changing the distribution of said migration particles to effect display, and a dispersion medium which is filled in the closed space and has a relative dielectric constant different from said migration particles which are dispersed in the dispersion medium, and

wherein said migration particles are migration particles of two types having different charge polarities and a substantially identical color, and a display voltage of a predetermined polarity and a display voltage of a polarity opposite to the predetermined polarity of the display voltage are alternately applied to the display electrode.

9. An apparatus according to Claim 8, wherein said apparatus further comprises a reset electrode for collecting said migration particles and resetting a distribution of said migration particles, and the display electrode and the reset electrode are disposed to provide a non-uniform electric field distribution

therebetween, and

wherein an AC voltage is applied to the display electrode when the display is reset.

10. An apparatus according to Claim 9, wherein an operation for moving the migration particles in a strong electric field area of the non-uniform electric field is a reset operation when a relative dielectric constant of the migration particles is larger than that of the dispersion medium, and an operation for moving the migration particles in a weak electric field area of the non-uniform electric field relative dielectric constant of the migration particles is smaller than that of the dispersion medium.

11. A driving method for driving a display apparatus, comprising a first substrate provided with a closed container, charged particles of two types which have mutually different charge polarities and a substantially identical color and are held in the closed container, and an electrode for generating an electric field in the closed container, wherein said charged particles are moved by the electric field to determine a distribution of said charged particles in the closed container, thereby to effect display;

said driving method comprising the steps of:

providing a display electrode for changing a

distribution of the charged particles to effect the display and first and second reset electrodes for changing the distribution of the charged particles to reset the display, and

repeating a first reset operation for performing reset of the display by applying a reset voltage of a predetermined polarity to the first and second reset electrodes, a first display operation for performing the display by applying a display voltage of a predetermined polarity to the display electrode, a second reset operation for performing reset of the display by applying a reset voltage of a polarity opposite to the predetermined polarity of the reset voltage to the first and second electrodes, and a second display operation for performing the display by applying a display voltage of a polarity opposite to the predetermined polarity to the display electrode.

12. A driving method for driving an electrophoretic display apparatus comprising first and second substrate disposed with a predetermined spacing therebetween to provide a closed space, and migration particles dispersed in the closed space, a distribution of said migration particles being changed in the closed space to effect display;

said method comprising the steps of:

providing a display electrode for changing the

distribution of said migration particles to effect display, a reset electrode for changing the display rewriting of said migration particles to reset the display, and a dispersion medium which has a relative dielectric constant different from said migration particles which are dispersed in the dispersion medium, and

using migration particles of two types having different charge polarities and a substantially identical color as said migration particles,

arranging the display electrode and the reset electrode so as to provide a non-uniform electric field distribution therebetween, and

repeating a first display operation for performing the display by applying a display voltage of a predetermined polarity to the display electrode, a reset operation for performing reset of the display by applying an AC voltage to the display electrode, and a second display operation for performing the display by applying a display voltage of a polarity opposite to the predetermined polarity to the display electrode.